

ENVIRONMENTAL ASSESSMENT

Case File No. A-035017

AK-040-04-EA-038

Applicant: Forest Oil Corporation

Type of
Action: Drilling of a Natural Gas Production Well

Location: Section 21, T. 8 N., R. 14 W., Seward Meridian

Prepared By: Harrison Griffin, Physical Scientist

Preparing
Office: Bureau of Land Management
Anchorage Field Office
6881 Abbott Loop Road
Anchorage, Alaska 99507

Date: August 23, 2004

I. INTRODUCTION

In 1961, the West Foreland #1 (WF #1) well was drilled on the west side of the Cook Inlet, using air support as there were no preexisting roads to transport equipment and materials. It was determined that the natural gas reserves discovered through the drilling of WF #1 could not be commercially developed at that time. The well remained unutilized until December of 1999 when Forcenergy proposed to install access roads, a pipeline and well head facilities for the WF #1 well. After an application was submitted, approval was granted by the lease surface owners, (Salamatof Native Association Inc. and private allottees), the Army Corps of Engineers, and the mineral estate owners (U.S. Bureau of Land Management, Cook Inlet Regional Inc.).

A. Purpose and Need for the Proposed Action:

The BLM has received an Application for Permit to Drill (APD) from Forest Oil Corporation to drill a natural gas production well, West Foreland #2 (WF #2), in the same Township, Section and Range as the preexisting West Foreland #1 well.

Natural gas produced from the WF #2 well will supply fuel gas, and lift gas to support development and production in the West McArthur River Unit. Development and production from this federal lease will ensure maximum and efficient recovery of this known gas reserve and the West McArthur River Oil Field. The Proposed Action is in accordance with the terms of the lease and federal laws and regulations.

B. Conformance With Land Use Plan:

The BLM has not developed a land use plan for surface or subsurface oil and gas development in the West Foreland area. However, this environmental analysis assesses the impacts of the Proposed Action and provides a basis for a decision on the proposal in accordance with federal regulations (43 CFR 1610.8(b)(1)).

C. Relationship to Statutes, Regulations, Policies, Plans or Other Environmental Analyses:

The surface use applications for access, development and production facilities are in accordance with the terms of the federal lease and federal regulations. These operations have received approval by Salamatof, CIRI and the COE.

BLM's authorization does not relieve the applicant of the responsibility to acquire future permits or approvals from other federal or Alaska State agencies per their regulatory requirements. Such approvals could include, but are not limited to, state and native corporation authorizations, state and federal air quality permits, and COE permits.

II. PROPOSED ACTION AND ALTERNATIVE

A. Proposed Action:

Forest Oil Corporation is proposing to drill a natural gas production well within the West McArthur River Unit (WMRU) on the west side of Cook Inlet. The physical location of the well will be in Section 21, T. 8 N., R. 14 W., Seward Meridian. The well head will be located 4,400' FNL and 4,649' FWL at the surface. The proposed location of the bottom hole is 4,260' FNL and 4,522' FWL. Drilling activities are tentatively scheduled to start on or around September 1, 2004, pending drilling rig availability. The drilling and development of the WF #2 well will aid in maximizing the efficient recovery of this known gas reserve and the WMRU. By establishing this well in the field, gas can be extracted or injected, depending on economic need and production demands placed upon the unit.

The well location will be accessed via the existing gravel road system that services oil and gas drilling/production operations in the West Forelands/Trading Bay area. Barges will be used to transport drilling equipment and supplies to an existing barge landing at the Trading Bay Production Facility (TBPf). A gravel airstrip is also located at the TBPf for any materials or equipment that need to be flown in. No additional road construction or reconstruction will be needed to complete this drilling project. Existing well facilities will be used to produce the WF #2 well. No new well facilities will be installed.

Water will be supplied using existing water sources available to Forest Oil at its West McArthur River Unit (WMRU) facility. Approximately 300 cubic yards of new gravel will be required to prepare a portion of the existing pad for drilling operations. This gravel will be obtained from an existing, permitted gravel pit located near the TBPf. Waste drilling mud and cuttings will either be hauled to existing permitted WMRU disposal cells/injection wells and be disposed of there, or be disposed of on-site by annular injection. No ancillary facilities will be used for drilling, or subsequent production, that are not already in place.

No reclamation plans are necessary for this well since it will be drilled and produced from an existing stable pad containing well and production facilities, already in place. The proposed drilling site is located on private lands, with surface ownership being held by Salamatof Native Corporation, Inc. Forest Oil has a comprehensive land use agreement with Salamatof Native Corporation, Inc. that specifically permits this type of operation. The proposed gas well will be placed in production using piping to existing gas production equipment and the existing pipeline. The site will be used for ongoing gas production operations for the foreseeable future. Eventual site closure requirements and procedures will be

followed, and final approval for site closure will be sought from the appropriate agencies.

B. No Action Alternative:

This alternative would deny construction of the West Foreland #2 well. Activities described in the Proposed Action would not occur. Production operations at the WMRU would continue. Periodic workovers of the wells, equipment replacement, well site visitations, injection of produced waters, etc., would continue until the existing WMRU wells deplete the proven oil reserves. The federal WF #1 well would remain shut-in. Depending on terms of the agreement between the surface owners and Forest Oil, WF #1 could be plugged and abandoned. This might involve the total removal of the pad, all associated piping and gravel. Should pad reclamation occur, planned revegetation, in combination with natural attenuation, would more than likely be the methodology used to return the area back to pre-development conditions.

III. AFFECTED ENVIRONMENT

A. Critical Elements:

The following critical elements of the human environment are either not present or would not be affected by the Proposed Action or No Action Alternative:

- Areas of Critical Environmental Concern
- Cultural Resources
- Environmental Justice
- Farmlands (Prime or Unique)
- Floodplains
- Invasive, Non-native Species (plants)
- Native American Religious Concerns
- Subsistence
- Threatened or Endangered Species
- Wastes, Hazardous/Solid
- Wetlands/Riparian Zones
- Wild and Scenic Rivers
- Wilderness

1. Air Quality:

No air quality data is available for the WF #2 well site. However, air quality for the Cook Inlet and Kenai Peninsula area is generally considered good.

Most of the land in the Kenai Peninsula Borough is classified by the Alaska Department of Environmental Conservation (ADEC) as Class II air

sheds. Class II air sheds are generally pollution free and allow some industrial development.

2. Water Quality, Surface/Ground:

Drainage of the lowlands for this area is generally to the east. Surface water of the wetlands has low turbidity and is often brownish in color. This brownish or "tea colored" water is attributed to the staining by organic compounds and to high iron content. This staining is natural and is not associated with oil and gas activities. Generally, surface and ground water quality is considered good.

3. Wetlands/Riparian Zones:

The proposed action would occur in the Kenai Lowlands area on the west side of Cook Inlet. Because the Kenai Lowlands were created from complex, largely modified, moraines, low rolling hills separate the nearly level wetlands of muskeg and swamp. In general, the area is poorly drained (as evidenced by the muskeg, swamp and numerous lakes) and generally free of perma-frost except for isolated lenses beneath bogs or frosted area. Dwarf shrubs usually dominate over a mat of sedges, mosses, and lichen which overlies a peaty substrate.

The USF&WS National Wetlands Inventory maps of the area identify two types of wetlands along the road corridor. These are generally described as persistent saturated scrub bog and persistent semi permanent flooded scrub bog. An aerial survey of wetlands in June, 1999, by Forcenergy and two environmental consultant staff revealed two additional wetland areas consisting of birch, alder and spruce. These are described as intermittent wetlands, with general drainage from east to west.

B. Land Status:

The surface estate is owned by native allottees and Salamatof. The mineral estate is divided and owned mostly by CIRI, with a small interest by the United States. The WMRU oil field is located within the Kenai Borough.

C. Geology, Topography and Soils:

Karlstrom (1964) describes the surficial geology in this area as Quaternary proglacial-lake-bottom sediments. These sediments underlie a terraced and channeled surface between major morainal belts. Quaternary age sediments are as much as 1,000 feet thick and overlie Tertiary rocks of the Kenai Group. This group consists mostly of siltstones, fine sandstones, and shales.

The WF #2 well location is within the Kenai Lowlands (Karlstrom, 1964) in a Seismic Risk Zone 3. This area could experience earthquakes of Richter magnitude 6.0 to 8.8 and could suffer major structural damage in the event of a large earthquake (COE, 1978).

In the vicinity of the West Foreland #2 well site, soil types consist of glacial till, lacustrine deposits of sand and silt and glacial outwash deposits with layers of gravel and sandy gravel. Isolated peat deposits are also present. Elevations for the area generally range from sea-level to a little more than 100 feet above sea-level.

D. Vegetation:

The proposed well is in the vicinity of open to closed white and/or black spruce forest with scattered stands of birch and cottonwood. These forests are interspersed with wetland openings consisting of lowland sedge-moss bog meadows. Depending on forest canopy cover, the under story in the forested areas consists of varying amounts of willow and alder, dwarf birch, blueberry, cranberry, Labrador tea, crowberry, feather mosses, etc. Bluejoint grass tends to dominate open areas over a wide range of growing sites.

E. Wildlife:

Moose are common as successional vegetation provides plentiful browse. Other mammals known to inhabit the area include redbacked voles, red squirrels, muskrats, porcupines, and hares (James M. Montgomery Consulting Engineers, (1992).

The Kenai Lowlands support many species of birds and waterfowl. The list of species includes white crowned sparrow, tree swallows, northern or black-backed woodpeckers, juncos, yellow-rumped and yellow warblers, fox sparrows, Lincoln sparrows, Savannah sparrows, least sandpipers, white-crowned sparrows, whimbrels, parasitic jaegers, sandhill cranes, common loons, red-necked grebes, surf scoters, trumpeter swans, greater scaup, American widgeon, arctic terns, mallards, Bonaparte's gulls, Barrow's goldeneyes, red-throated loons, and red-necked phalaropes (James M. Montgomery Consulting Engineers, 1992, citing a letter from Bailey, 1992; Rosenberg, 1986). Bald eagles nest in the Kenai National Wildlife Refuge. Beaver Lake has a known nest (James M. Montgomery Consulting Engineers, 1992, citing a "personal communication" from Joyce, 1992).

The forested coastal habitats near the proposed well provide year round habitat for -black bear, brown bear, moose, lynx, martin and wolves. Migrant and resident landbirds use the area's shrub and forest communities for nesting. Adjacent

coastal mudflats and the intermittent shrub wetlands provide habitat for breeding and migrant shorebirds and waterfowl.

F. Socioeconomic:

More than half of the people in the Kenai Peninsula Borough live in or near the towns of Nikiski, Kenai, Soldotna, Sterling, and Kasilof. The largest of these communities is Kenai, which is located approximately 35 miles southeast of the well pad, across the Cook Inlet. The U.S. Census for Kenai in 1990 was 6,327; the Alaska Department of Labor estimated the population in 1995 at 7,006 for Kenai (ADF&G, 1995).

The Kenai Peninsula supports a diversified economy including oil and gas extraction, petroleum refining, fishing and fish processing, tourism, timber harvesting, transportation, and recreation. Recreational uses include fishing, hunting, camping, hiking, canoeing, etc. Kenai Borough is one of the most heavily used recreational areas in the State.

Oil and gas exploration and production also have a long history within the Kenai Borough providing numerous and relatively high paying employment opportunities. The town of Kenai is considered the center of the oil and gas industry on the peninsula.

IV. ENVIRONMENTAL CONSEQUENCES

A. Impacts of the Proposed Action:

1. Critical Elements:

a. Air Quality:

An increase in traffic, ranging from automobiles to heavy equipment, will be prevalent during the well construction phase. This will result in an increase in noise pollution, dust and other emissions along the preexisting road/pipeline corridor, approaching the drilling pad, as well as on and around the drilling pad. The increase in emissions, during the construction phase (approximately 30 days) is not expected to change the current airshed classification of this area. Existing emissions occurring as a result of the ongoing WMRU oil field activities include particulate matter, methane, carbon dioxide, carbon monoxide, nitrous oxides, and water vapors. Future well-work and the final abandonment and rehabilitation of the WF #2 site will also increase noise pollution and emissions along the access route and around the pad, but these operations will be of short duration (one to fifteen days).

No air quality impacts associated with a blowout are anticipated. A surface safety valve will be installed and tested prior to placing the well on production. This equipment will be used in the unlikely event of processing equipment failure. If an upset should occur, the equipment would seal the hole and contain the gas and any liquids until the surface equipment could be repaired. However, in the unlikely event of a natural gas release at surface, air quality could be impacted through the release of methane, propane, butane and other light-end natural gas components. Should the release pose potential fire/explosive hazards, the gas would be diverted from the well bore and burned or ignited consuming the fuel and releasing carbon dioxide, carbon monoxide, nitrous oxides and water. Air quality may be temporarily affected by dust and exhaust from other construction and operational activities. Fires, smoke, volcanic eruptions, and pollutants drifting from the west can affect visibility and air quality.

b. Water Quality, Surface/Ground:

Only natural gas with a small volume of water is expected to be produced from the WF #2 well. The water will be separated at the well head facilities. The water will be stored in tanks on location and periodically transported by truck to an approved disposal well in the WMRU for subsurface injection. Impacts to water quality could occur should produced water be spilled on the surface.

Although not anticipated and highly unlikely, a release of a natural gas liquid and/or liquid hydrocarbon could impact surface and subsurface water quality. Natural gas liquids would rapidly evaporate and disperse into the atmosphere. Heavier liquids could penetrate the soils and enter the ground waters. Should the release pose potential fire/explosive hazards, it would be burned or ignited consuming the fuel. A pipeline break or similar release of natural gas would quickly dissipate into the atmosphere.

Fuel spills, oil leaks, hydraulic line breaks and similar type "spills" also have potential to impact water quality. Such spills would likely be very small in volume and contained on the well pad at the facilities or on the gravel road. These spills would be immediately cleaned up.

2. Geology, Topography and Soils:

All construction activities will occur on the existing WF #1 well pad. Vegetative clearing and grading of the existing gravel pad are not anticipated. Gravel will be obtained from an existing gravel quarry. No additional acreage will be disturbed during the removal of any gravel.

3. Vegetation:

Well construction on a preexisting pad requires little to no vegetative clearing to complete the project. A recent consultation (August 2004) with Bill Penrose of Fairweather E & P services yielded information about the pad's recent usage. The pad is currently free of overgrowth, and, as it will not need to be cleared or expanded, there is no need for, or concern of deforestation in and around the pad area.

Vegetation adjacent to the pad may be adversely affected by vehicle dust. Such effects should be minor given the summertime construction and the frequency of rain showers.

Potential releases of fluids and gases at the surface could kill vegetation and impact water quality. Surface releases will be minimized through the use of appropriate equipment including a surface safety valve.

4. Wildlife:

Motor vehicle access to the immediate area surrounding the construction activities is almost exclusively restricted to oil and gas field workers. The increase in human activity and noise around the proposed construction area may temporarily displace existing wildlife in the immediate area. Upon completion of the construction operations, traffic and human activity will be minimal and should cause minimal displacement.

However, access to the area provided by the road will impact the big game, furbearer and waterfowl populations by potentially increasing hunting pressure in an area that would otherwise be inaccessible. The remoteness of the area may also result in the illegal taking of wildlife.

5. Socioeconomic:

No impacts to the area's demographic conditions are anticipated as a result of the Proposed Action. No impacts to recreational activities are anticipated. Only day work is anticipated. Workers may be housed at the WMRU facilities or transported from Anchorage or Kenai on a daily basis. Production activities associated with the WF #2 well are anticipated to last for 15-20 years. However, the level of activities is so small it will easily

be absorbed by the workforce at the WMRU. Production of gas will generate royalty revenues to CIRI and state and federal governments and surface right-of-way and damage compensation to the surface owners.

B. Impacts of the No Action Alternative:

1. Critical Elements:

a. Air Quality:

Air quality would still be impacted under the No Action Alternative. The existing facilities at WMRU would still produce oil and gas, but would use gas from a different source to accomplish the production activities. There would still be releases of particulate matter, methane gas, carbon dioxide, carbon monoxide and nitrous oxides. Vehicle emissions would be similar to the Proposed Action from vehicle traffic accessing Forest Oil Corporation's southern facility.

b. Water Quality, Surface/Ground:

No impacts to subsurface resources would occur. Impacts to surface waters and hydrologic conditions would be identical to those described under the Proposed Action.

2. Geology, Topography and Soils:

No additional surface disturbance would occur under the No Action Alternative.

3. Vegetation:

Vegetation clearing on the existing WF #1 well pad would not occur under the No Action Alternative. The road would still be used to access Forest Oil Corporation's southern facility. Impacts to vegetation would be identical to those described for the Proposed Action. Spills, leaks, etc. could still occur on the road from transport vehicles.

4. Wildlife:

Impacts would be similar to those identified under the Proposed Action except that wildlife would not be subjected to the displacement impacts associated with well construction/installation. Vehicular travel on the roads would be less, but would still occur as a result of accessing the southern facility.

5. Socioeconomic:

Not providing the opportunity for the continued development of gas reserves could have future impacts on the natural gas supply. Although the proposed use of the gas is for fuel, future production could be tied into the existing pipeline infrastructure supplying gas to the Anchorage area. Halting production and development of the reserves accessible through the WF #2 well may result in a decline in the available gas for fueling electric power suppliers and home and business heating for the Kenai area, the city of Anchorage, and the Wasilla and Palmer valleys.

In addition, halting the continued development of the West Foreland reserves could result in less than the maximum and efficient recovery of the known WMRU oil and gas reserves. As a result, some of this known recoverable reserve may never be recovered which would create a greater dependence on imported oil and gas.

As existing production continues to decline from not finding or developing replacement reserves, existing and future jobs for residents of the local communities and local, State, and federal revenue sources will be lost.

C. Cumulative Impacts:

The well head facilities could slightly increase air emissions adding to those already existing. Noise levels during drilling operations would be cumulative to the existing WMRU field operations. These would be of short duration (approximately 30 days).

Other cumulative impacts could include increases in fluid wastes and a slight increase in the potential for oil, hydraulic fluids, glycol and similar type spills.

Loss of approximately 3-4 acres of habitat due to the existence of the drilling pad would be a long-term (15-20) year cumulative impact. The impact would exist until the drilling pad is reclaimed.

Additional producible gas reserves will increase CIRC, state and federal revenues. Additional reserves could extend the WMRU field life increasing recoverable reserves and lengthening the duration of both the positive and negative impacts associated with that field.

V. CONSULTATION AND COORDINATION

A. Persons and Agencies Consulted:

The Alaska Heritage Resource Survey was consulted for occurrence of cultural resources. No other consultations were necessary.

B. List of Preparers:

The following is a list of the primary personnel involved in preparing this document:

Harrison Griffin, Physical Scientist
Donna Redding, Archaeologist
Bruce Seppi, Wildlife Biologist
Dave Kelly, Surface Protection Specialist
Mary Hanson, Environmental Coordinator
Greg Balen, Supervisory Realty Specialist

A complete list of the individuals involved in preparing and reviewing this document are identified on the attached NEPA routing slip.

Bibliography

Anchorage Field Office, 1995, Environmental Assessment: Proposed Kenai Unit Well 43-6XRD, 18pp.

James M. Montgomery Consulting Engineers, 1992, Review Draft— Stormy Lake East/Southeast Swanson Environment, for ARCO Alaska, Inc., Anchorage, Alaska.

Karlstrom, T.N.V., 1964, Quaternary Geology of the Kenai Lowland and Glacial History of the Cook Inlet Region, Alaska, U.S. Geological Survey Professional Paper 443, Washington, D.C., 69 pp.

Oasis Environmental, 1997, Environmental Assessment Sterling Development Well (#228-28) Swanson River Field, 33pp.

Rosenberg, D.H., 1986, Wetland Types and Bird Use of Kenai Lowlands, U.S. Fish and Wildlife Service, Anchorage, Alaska.

U.S.F.W.S. (U.S. Fish and Wildlife Service), 1985, Comprehensive Conservation Plan/Environmental Impact Statement/Wilderness Review, Anchorage, Alaska, 195 p.